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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/741,754      | 12/19/2000  | Randy T. Pike        | GCSD-1096(51114)    | 6488             |

7590 07/16/2003

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| EXAMINER |
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CRUZ, LOURDES C

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

2827

DATE MAILED: 07/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 09/741,754             | PIKE ET AL.         |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Lourdes C. Cruz        | 2827                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 1-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                          | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>16</u> . | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Election/Restrictions***

Applicant's election without traverse of Claims 21-34 is acknowledged.

***Specification***

The disclosure is objected to because of the following informalities: See that in page 1, line 23 "cofied" should be co-fired.

Appropriate correction is required.

Also, the specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: See that while the specification makes mention of "LTCC" and "co-fired" ceramics, such terminology has not been described in the disclosure in detail. The claims recite use of such material, however, the disclosure gives no example of what kind of material meets this requirements. For the purpose of this examination the examiner assumes any ceramic meets this limitations.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claims 21-24, 26, 28-31, and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Nguyen (US5892279).

Nguyen discloses (See Figs 13-21):

- An electronic device comprising: a first member 42 comprising silicon (Col. 8, lines 2+); and a second member 38 comprising a low temperature co-fired ceramic (LTCC) material (Col. 5, lines 5+); said first and second members having opposing surfaces thereof anodically bonded together to form a hermetic seal (Col. 9, lines 36+) therebetween.
- An electronic device according to Claim 21 wherein said first and second members have opposing generally planar major opposing surfaces (see that the above layers are shown as two layers with surfaces opposed to one another).
- An electronic device according to Claim 21 wherein at least one of said first and second members comprises at least one cooling structure therein (Col 7, line 62).
- An electronic device according to Claim 21 wherein said first member further comprises at least one first micro-fluidic cooling structure therein (Col. 7, line 65; also see fig. 15, number 60).
- An electronic device according to Claim 24 wherein said second member further comprises at least one second micro-fluidic cooling structure aligned with the at least one first micro-fluidic cooling

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structure (see fig. 10, reference numbers 60,42,38; see alignment of structures relative one another).

- An electronic device according to Claim 26 further comprising at least one integrated circuit (see IGBT 126) adjacent said at least one second micro-fluidic cooling structure.
- An electronic device according to Claim 28 wherein said at least one integrated circuit comprises electrical connections (see unlabeled wires); and wherein the second member comprises external electrical connections (see that unlabeled wires are connected to leads EP) connected to the electrical connections of said at least one integrated circuit.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 25,27,32, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen.

See that Nguyen discloses all the above limitations. However, see that Nguyen fails to specifically disclose:

- said at least one first micro-fluidic cooling structure comprises **an evaporator**.
- said at least one second micro-fluidic cooling structure comprises at least one **micro-fluidic passageway**.

Although Nguyen fails to specifically describe an evaporator and a micro-fluidic passageway, any heated layer contacting the circulating fluid acts as an evaporating/evaporator. Also, see that for the fluid to circulate, or to even be present a passageway or cavity has to be present.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that a heated layer that drives heat away from the device would evaporate the existing fluid in a liquid containing heat-slug; that a passageway or cavity is needed in order to contain the fluid.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elle Cruz whose telephone number is 703-306-5691. The examiner can normally be reached on M-F 10-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

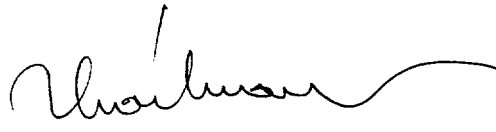
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Lourdes C. Cruz  
Examiner  
Art Unit 2827



Elle Cruz  
July 13, 2003



Chau Thui